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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,917	08/26/2003	Blaine D. Gaither	10015698-4	5774

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
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EXAMINER

DINH, NGOC V

ART UNIT	PAPER NUMBER
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2189

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,917

Applicant(s)

GAITHER, BLAINE D.

Examiner

NGOC V DINH

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 and 8-10 is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,662,277. Although the conflicting claims are not identical, they are not patentably distinct from each other.

APPLICATION 10/649917	PATENT 6,662,277
<p>Claim 1:</p> <p>A computer system, comprising: a cache memory that reads and caches a group of lines with a single memory transaction; and a system for maintaining identity of which device, if any, owns the group of lines, and which device, if any, owns each individual line within the group of lines .</p>	<p>Claim 1:</p> <p>1. A computer system, comprising: a cache memory that receives and caches a group of lines with a single memory transaction; a system for maintaining identity of which device, if any, owns the group of lines, and which device, if any, owns each individual line within the group of lines; a processor; and when the processor requests a single</p>

	line within the group of lines, and the line is not present in the cache memory, and when more than one line within the group of lines is unowned, then more than one line is copied to the cache memory.
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Claim 1 of the instant application is anticipated by patent claim 1 in that claim 1 of the patent explicitly contains all the limitations of claim 1 of the instant application. Claim 1 of the instant application therefore is not patently distinct from the earlier patent claim and as such is unpatentable for obvious-type double patenting.

Per claim 2:

Regarding claim 2 of the instant application, where it is stated “maintaining identify of which **bus**” comparing to claim 1 of the patent cites “maintaining identify of which **device**”.

However in column 9, lines 30-35 of the patent, and column 5 paragraph [0047] of the instant application cited “and which processor, or cache, or node, **or bus**, is the owner of the line”.

The device according to the patent can be a processor, a cache or a **BUS**, therefore claim 1 of the patent anticipates claim 2 of the instant application.

Per claim 3:

Regarding claim 3 of the instant application, the limitation “at least two lines in the group of lines having separate owners” of the instant application, is anticipated by the limitation “marking the requested line as exclusive, and marking the non-requested lines as shared” in claim 8 of the Patent.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 6-7 are rejected under 35 U.S.C.102 (e) as being anticipated by Duncan et al PN 6832282.

Per claim 6:

Duncan teaches a cache memory that requests one particular line within a group of lines; and the cache memory receiving the entire group of lines col. 13, lines 59-65].

Inherently, Duncan teaches the entire group of lines is owned by one owner. This is because in multiprocessor systems, caches are usually attached to each processor. When a processor requests access of a cache line or a group of cache lines, the system must now decide whether to give the cache line or group of cache lines to the processor (owner) in a shared state or in an Exclusive state [one/single owner] [MOESI] cache coherency protocol]. Prior to act upon the cache line or group of cache lines, the processor must go back to the bus and request that the cache line or group of cache lines be given in the exclusive state [one /single owner]. The system will then obtain exclusive right and grant exclusive right [one/single owner] to that processor (owner).

Per claim 7:

Duncan teaches the claimed limitations as mention in claim 6, and further teaches maintaining ownership information for each individual line within the group of lines [e.g., a portion of each memory data block ("cache line") is associated with the directory and, as such, contains information about the current state of the cache line, as well as an indication of those EV7s 202 in the system 200 holding copies of the cache line, col 7, lines 25-30; col. 7, lines 45-46].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 5 is rejected under 35 U.S.C 103(a) as being unpatentable over Safranek et al PN 6493809, and in view of Duncan et al PN 6832282.

Per claim 5:

Safranek teaches a cache coherency protocol, wherein the group of cache lines is partially owned by another cache memory [e.g., invalidate shared cache lines that reside on the separate nodes, col. 1, lines 8-13].

Safranek does not teach a cache memory a cache memory that requests one particular line within a group of lines; and the cache memory receiving a variable number of lines within the group of lines, in response to the request for the one particular line.

Duncan teaches a prefetching process in which a cache memory that requests a cache line, and the cache memory receiving variable (additional) number of lines [col. 13, lines 59-65].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the cache memory to receive variable number of lines, when the cache only request a particular line, into Safranek cache system in order to increase cache hits ratio.

Allowable Subject Matter

4. Claims 4, 8-10 are allowed.

The primary reasons for allowance of claim 4 in the instant application is the combination with the inclusion of at least the limitation of "a cache memory that read a group of lines

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with a single memory transaction; and the cache memory receiving..., and when the group of lines is partially owned by another cache memory”.

The primary reasons for allowance of claim 8 in the instant application is the combination with the inclusion of at least the limitation of “copying, from the shared memory to the cache memory, all additional unowned lines within a group of lines corresponding to the requested line, and not copying any owned lines, other than the requested line “.

The primary reasons for allowance of claim 10 in the instant application is the combination with the inclusion of at least the limitation of “detecting that all lines in the group of lines have been modified by one owner”.

Because claim 9 depends on claim 8. This claim is considered allowable for at least the same reasons noted above.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc Dinh whose telephone number is (571) 272-4191. The examiner can normally be reached on Monday-Friday 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Donald A. Sparks, can be reached on (571) 272-4201. The fax phone numbers for the organization where this application or proceeding is assigned are (571)-273-8300 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.



NGOC DINH

Patent Examiner

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August 12, 2005



DONALD SPARKS
SUPERVISORY PATENT EXAMINER